Context

IT Reformation & Partnership

Cloud 101

Examples

Small-Large Business Partnership

SAIC
From Science to Solutions

NASA

REDE, Inc.

8(a) Certified Women-Owned Small Business

GSA Schedule 70
Contract No. GS-35F-0037X

Cloud Computing in a Secured Environment: An Opportunity for Large and Small Contractor Partnerships

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March 23, 2011 Marquis 4 – 2:25 – 3:15

"Reforming IT & New Partnerships"

- Cloud Computing is the leading *IT reformation* of our time.

- Although cloud computing technology is dominated by very large companies with the capital it takes to build and operate massive data storage facilities, there is plenty of room for small business to partner and contribute.

- As one of the DOE's core values, small business involvement and *partnership* must be the silver lining in any DOE cloud-computing application.

Cloud Characteristics & Benefits

Cloud Characteristics	Agency View	Project View
On-demand self-service	▪ Streamlined provisioning process ▪ Lower labor costs ▪ Satisfied customers	▪ Needs met "immediately"
Broad network access	▪ Satisfied customers ▪ Enables mission success	▪ Enables project team members to can access data from any location, while on travel, or tele-working ▪ Accommodates end user platforms flexibility
Resource pooling	▪ Higher computing resource utilization ▪ More energy efficient ▪ Lower hardware lifecycle costs	▪ Low up front costs ▪ Can pay as you go rather then build new computing environment ▪ Have access to compute resources otherwise unavailable

Cloud Characteristics & Benefits (continued)

Cloud Characteristics	Agency View	Project View
Rapid elasticity	▪ Streamlined provisioning process ▪ Lower labor costs ▪ More responsive to urgent agency needs	▪ Seemingly unlimited compute resources available near instantaneously ▪ Only paying for resources used ▪ Scales as project needs grow/shrink
Measured Service	▪ Improved demand forecasting ▪ Improved outage management ▪ More energy efficient ▪ Better insight into customer demands	▪ Billed only for resources used ▪ Resource usage awareness

Cloud Security Considerations

Considerations	Precautions
Data	• Understand protection needs for your data • Understand protections against unauthorized access • Understand where data can be stored and how the laws apply • Understand who has physical access • Clarify data ownership • Identify exist strategy
Governance	• Ensure organizational policies, procedures, and standards extend to the cloud • Institute internal audit mechanisms
Compliance	• Understand legal and regulatory requirements (e.g. Clinger Cohen Act, Privacy Act, FISMA, NARA statues & regulations, Federal Records Act) • Understand provider's ability to meet legal and regulatory requirements • Understand provider's ability to produce documents for litigations, Freedom of Information Act requests, etc.

Cloud Security Considerations

Considerations	Precautions
Trust	• Level of provider's transparency into their operations • Understanding of security and management controls • Willingness to be subject to monitoring of controls
Availability	• Protections to ensure availability for disruptions or disasters • Understand provider's backup and recovery capabilities
Incident Response	• Ensure support for investigations • Understand provider's procedures for incident responses • Ensure the organization's incident response plans and procedures address cloud computing environments

Examples

1. Public Cloud as a Data Center Resource
2. Government Agency Web and Application Hosting

Investigation of Public Cloud as Data Center Resource

Enterprise Adoption Issues

- Cloud API Frameworks are a developer tool set
  - APIs are intended to be exploited by developers in their code to rapidly build applications to their needs
- Minimal GUI and Dashboard tools
- No billing breakdown of costs for individual projects on the account
- Thousands of resources available, good and bad, no controls, no policy, no governance

Governance Needs

- Monitor and enforce security activities activity that happens in the cloud after the fact
- Ability to breakdown costs by project on the same account
- Ability to control spend on infrastructure
- Ability to manage who has access to which resources
- Add governance and security controls where none exist

Investigation of Public Cloud as Data Center Resource
enStratus – Management Layer for Governance and Policy

- Available as a Service or Product
- Web-based interface
- Manages multiple cloud architectures, both public and private, from a single console
- Layers users and role accounts on top of the single Amazon account
  - Can allow only vetted and certified images out of Amazon thousands to users
  - Limit which users can access which images
  - Can use SAML tokens to enable use of agency user accounts and passwords to access Amazon resources
  - Tracks individual user or group usage and billing from master Amazon account
  - Can use 2-factor authentication
  - Automates most common System Admin tasks
- Image management and deployment
- Monitoring and reporting
- Provides file system encryption

Government Agency Web and Application Hosting example

Problem Statement

Scalability

- Website traffic is increasing rapidly (well over 10M hits/day) and site is having trouble scaling

Availability

- Website has had a few limited outages over the past two years. It does not have a truly highly-availability solution

Cost

- Storage costs of the website are very high and data volumes are increasing

Search

- Current search architecture is costly

Content Management System

- The current web CMS is not very robust and does not support automated push to production

Government Agency Web and Hosting Application Proof of Concept Accomplishments

- Deployed portion of agency.gov to the Amazon cloud environment
- Created roadmap to transition to the Cloud
- Created RESTful web services for access to Agency Application data using n-Tier architecture
- Created a data catalog to help users discover the methods available to retrieve filings

Government Agency Web and Hosting Application Key Elements of the Next Generation Cloud Solution

- Eliminate Local Storage in favor of Cloud Storage
- Develop Catalog of Web Services
- Process Data feeds in Cloud
- Move Legacy Application Components to the Cloud
  - Provision cloud infrastructure too look just like current infrastructure
- The cloud enables a scalable architecture that will support
  - Increased supply of data
  - Increased traffic from additional value-added web services
  - Increased traditional web site traffic

Reflections on the Role of Small Business in the Development and Adoption of Cloud

- Earliest adopters…

- Necessity as a key driver

- Similar to the dot.com era

- Easier for small business to apply as not encumbered with existing infrastructure, systems and processes.

- A big part of cloud implementation is getting out of our own way.

- Small business can help big business adopt the spirit of cloud computing because they are using it out of necessity.

- Small business roles going forward…

    - Staffing services

    - Specific skill sets

    - Targeted technologies

enStratus – An innovative cloud computing small business
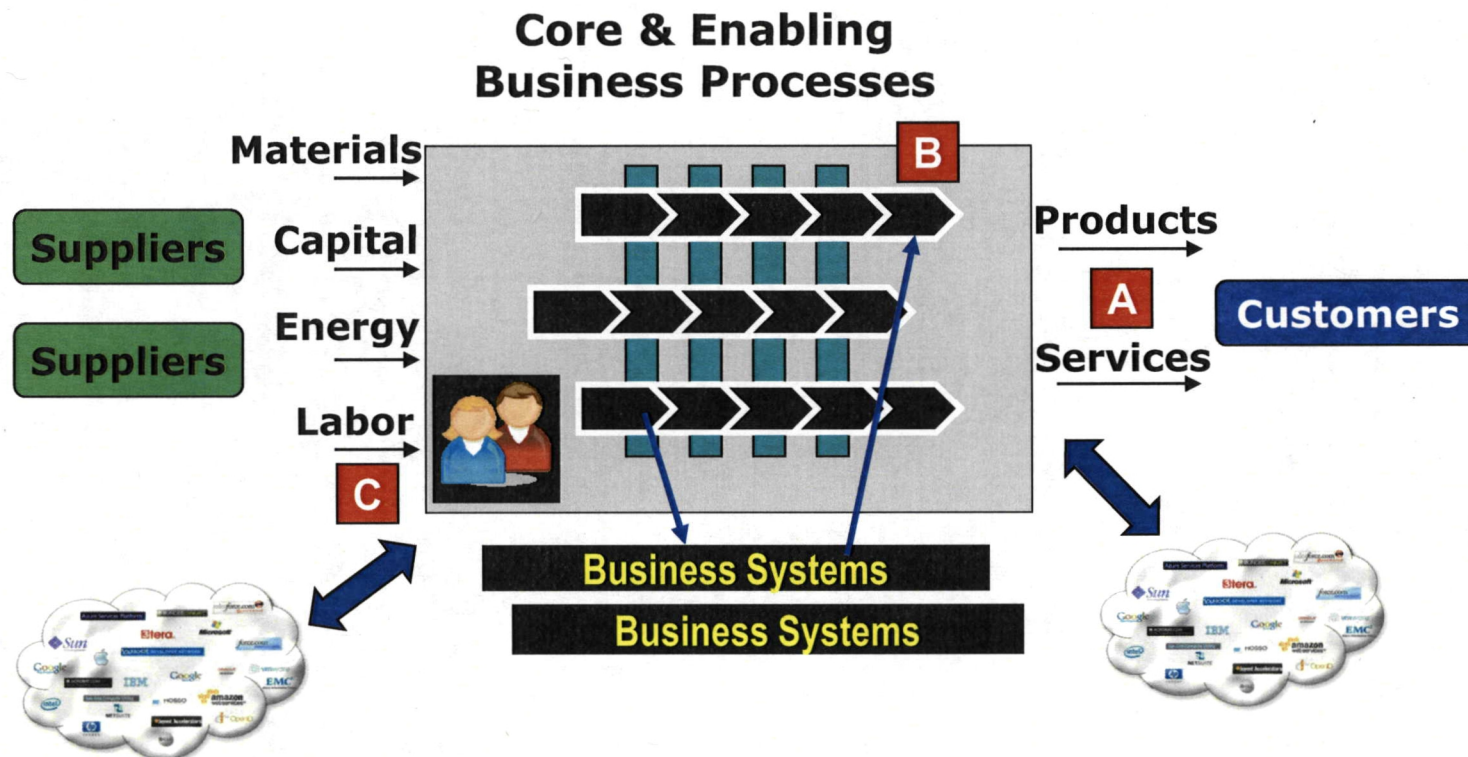
enSTRATUS

- Makes cloud management software
- Addresses three key concerns of cloud computing
  - Cloud Security
  - Cloud Reliability
  - Cloud Independence
- Completely cloud-based business
  - Google for email and calendar
  - Salesforce for CRM
  - Xero for accounting
  - Valtira for web and content management
  - Constant Contact for email
  - Twitter, LinkedIn, Facebook for social media. Especially Twitter.

Small – Large Business Partnerships

- Regardless of what happens in the Clouds…business remains a down-to-earth proposition.
- This SIPOC Model helps to organize and focus our partnership effort for maximum business benefit; at the **A**, **B** & **C** Pressure Points.
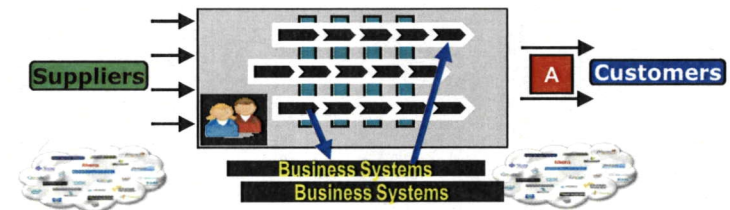
Strategic Focus of Small – Large Business Partnership

A   **Strategic Alignment** starts with the customer and works backwards.
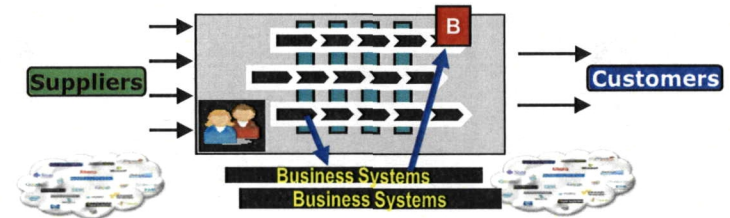

Small Business Roles...

- Small business can help answer the question, "What is most important to the customer and how well is the organization doing on those most important items?"
- Small business can lead a Voice of the Customer initiative including design, implementation and analysis to measure customer perceptions of cloud applications and their impact on the day-to-day business operations.

Operational Focus of Small – Large Business Partnership

B **<u>Operational Alignment</u>** – The business processes are so well aligned with the customer that there's a clear line of sight to the customer at any point along every process.
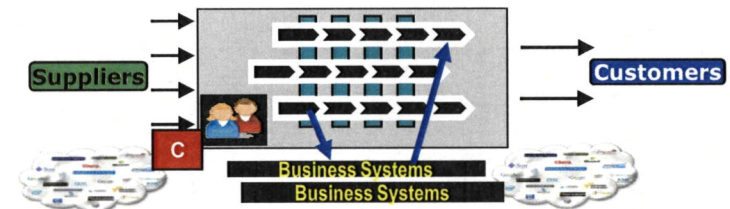

Small Business Roles...

- Lead a third party diagnostic of the as-is state – are processes defined using SIPOC, is process ownership clear, where are the bottlenecks, are critical customer requirements being met...
- Develop and implement strategies to improve business processes. For example, facilitate process Improvement through Six Sigma methods.

Organizational Focus of Small – Large Business Partnership

C **Organizational Alignment** – Employees, managers and direct reports alike, are going about their work with an eye to continuous process improvement and customer satisfaction.

Small Business Roles…

- Evaluate the organization design; present alternate right sizing plans.
- Evaluate leadership/management practices.
- Offer executive coaching.
- Assess readiness for change and lead the change management effort - communication, training and stakeholder management.

Top 3 Critical Success Factors
Small – Large Business Partnerships

1. There is a **Customer-aligned Vision** of partnership success. We measure partnership success in terms of the customer's success.

1. We share a common set of **Business Values** including badgeless teamwork and process-centered, customer-focused continuous improvement.

1. **Financial Equity**; there exists a win-win-win business arrangement evidenced by results you can count for the customer and for the small and large business contractors.

QUESTIONS?